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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/781,272	02/18/2004	Robert J. Koffron	KOFF 0124 PUS1	2056
22045	7590	04/02/2010	EXAMINER	
BROOKS KUSHMAN P.C. 1000 TOWN CENTER TWENTY-SECOND FLOOR SOUTHFIELD, MI 48075			KASTLER, SCOTT R	
ART UNIT	PAPER NUMBER			
	1793			
MAIL DATE	DELIVERY MODE			
04/02/2010	PAPER			

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte ROBERT J. KOFFRON and
ROSS A. JACOBS

Appeal 2007-4472
Application 10/781,272
Technology Center 1700

Decided: November 30, 2007

Before BRADLEY R. GARRIS, CHUNG K. PAK, and
JEFFREY T. SMITH, *Administrative Patent Judges*.

PAK, *Administrative Patent Judge*.

DECISION ON APPEAL

This is a decision on an appeal under 35 U.S.C. § 134 from the Examiner's final rejection of claims 1 through 12, 14 through 25, and 28 through 31, all of the claims pending in the above-identified application. We have jurisdiction pursuant to 35 U.S.C. § 6.

STATEMENT OF THE CASE

The subject matter on appeal is directed to a vortex inhibitor for use in molten metal pouring comprising a refractory body with a hollow chamber and a sacrificial member for aligning the refractory body (Spec. 4). The sacrificial member, such as a metal tube, rod or bar, can dissolve into a molten metal bath (Br. 6 and Spec. 5, ll. 25-27). According to the Appellants (Br. 4-7)¹, the sacrificial member discussed *supra* corresponds to the means recited in representative claims 1, 14, and 30. Claims 1, 14, and 30 are reproduced below:

1. A vortex inhibitor for molten metal pouring from a discharge nozzle comprising:

a uniform castable refractory body having a generally tapering shape along a longitudinal axis from a base toward a narrow end and a hollow chamber positioned longitudinally to the body extending within the body; and

a means for orienting the refractory body in a narrow end downward position if the refractory body is misaligned, wherein the means for orienting is retained by the hollow chamber;

whereby the integral body combining the refractory body and the means for orienting has a specific gravity of less than the specific gravity of molten metal.

14. A vortex inhibitor for molten metal pouring from a discharge nozzle comprising:

¹ Our reference to the Appellants' Brief ("Br.") is to the Amended Brief filed on November 30, 2006.

a uniform castable refractory body having a generally tapering shape along a longitudinal axis from a base toward a narrow end and a hollow chamber positioned longitudinally to the body extending within the body; and

a means for aligning the refractory body in the metal pouring vessel during at least a portion of the metal pour without substantially obstructing the flow of molten metal through the discharge nozzle, wherein the means for aligning is retained by the hollow chamber

whereby the integral body combining the refractory body and the means for aligning has a specific gravity less than the specific gravity of molten metal, and is self-orienting in a narrow end downward position when supported in molten metal.

30. A vortex inhibitor for molten metal pouring from a discharge nozzle comprising:

a uniform castable refractory body having a generally tapering shape along a longitudinal axis from a base toward a narrow end and a hollow chamber positioned longitudinally to the body extending within the body; and

a means for orienting the refractory body in a narrow end downward position without persisting in the discharge nozzle, wherein the means for orienting is retained by the hollow chamber;

whereby the integral body combining the refractory body and the means for orienting has a specific gravity less than the specific gravity of molten metal, and is self-orienting in a narrow end downward position when supported in molten metal.

As evidence of unpatentability of the claimed subject matter, the Examiner has relied upon the following references:

LaBate '734	US 4,494,734	Jan. 22, 1985
LaBate '903	US 4,709,903	Dec. 1, 1987
Eastwood	US 5,451,036	Sep. 19, 1995

The Examiner has rejected claims 1 through 12, 14 through 25, and 28 through 31 under 35 U.S.C. § 103(a) as unpatentable over the combined disclosures of Eastwood and either LaBate '734 or LaBate '903.

The Appellants appeal from the Examiner's decision rejecting the claims on appeal under 35 U.S.C. § 103(a).²

PRINCIPLES OF LAW, FACTS, ISSUES and ANALYSES

Under 35 U.S.C. § 103, the factual inquiry into obviousness requires a determination of: (1) the scope and content of the prior art; (2) the differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) secondary considerations (e.g., unexpected results). *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1, 17-18 (1966). “[A]nalysis [of whether the subject matter of a claim would be obvious] need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.” *KSR Int'l v. Teleflex, Inc.*, 127 S. Ct. 1727, 1740-41 (2007) quoting *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006); see also *DyStar Textilfarben GmbH & Co. Deutschland KG v. C.H. Patrick Co.*, 464 F.3d

² We limit our discussion to claims 1, 14, and 30 consistent with 37 C.F.R. § 41.37(c)(1)(vii) (2005).

1356, 1361 (Fed. Cir. 2006) (“The motivation need not be found in the references sought to be combined, but may be found in any number of sources, including common knowledge, the prior art as a whole, or the nature of the problem itself.”); *In re Bozek*, 416 F.2d 1385, 1390 (CCPA 1969) (“Having established that this knowledge was in the art, the examiner could then properly rely, as put forth by the solicitor, on a conclusion of obviousness ‘from common knowledge and common sense of the person of ordinary skill in the art without any specific hint or suggestion in a particular reference.’”).

As evidence of obviousness of the subject matter defined by claims 1 through 12, 14 through 25, and 28 through 31 under 35 U.S.C. § 103(a), the Examiner has relied on the combined disclosures of Eastwood and either LaBate ‘734 or ‘903. The Examiner has found that Eastwood teaches a dart corresponding to the claimed vortex inhibitor having “a uniform refractory body (2) having a generally tapering shape along a longitudinal axis from a base to a narrow end, and including a hollow chamber (3)” and a tail (10) corresponding to the means-plus-function limitations recited in claims 1, 14, and 30 (Ans. 3). The Examiner appears to acknowledge that Eastwood does not mention that “the integral body combining the refractory body and the means for orienting has a specific gravity of less than the specific gravity of molten metal” as recited in claims 1, 14, and 30 (Ans. 3-4).

Although this feature appears to be inherently or necessarily present in the device of the type described in Eastwood, the Examiner has relied on either LaBate ‘734 or ‘903 to show that it would have been obvious to provide such feature in the device of the type described in Eastwood (Ans. 3-4). The Appellants have not challenged the Examiner’s determination

that it would have been obvious to one of ordinary skill in the art to design the device of the type described in Eastwood to have “a specific gravity of less than the specific gravity of molten metal” as required by claims 1, 14, and 30. Compare Ans. 3-5 with Br. 8-12. Nor have the Appellants challenged the Examiner’s finding that Eastwood teaches a vortex inhibitor having the claimed uniform castable refractory body. Compare Ans. 3-5 with Br. 8-12. The Appellants only contend that Eastwood does not teach or suggest the means-plus-function limitations recited in claims 1, 14 and 30 (Br. 8-12).

The dispositive question is, therefore, whether the description of “tail” in Eastwood constitutes a description or a suggestion of the claimed means-plus-function limitations within the meaning of 35 U.S.C. § 103(a). On this record, we answer this question in the affirmative.

As required by our reviewing court in *In re Donaldson Co.*, 16 F.3d 1189, 1193 (Fed. Cir. 1994) (*en banc*), we interpret the means-plus-function limitations recited in claims 1, 14, and 30 as a sacrificial member or equivalents thereof. This interpretation is not inconsistent with the Appellants’ position at pages 4 through 7 of the Brief and dependent claims 2 and 28 on appeal. The Appellants further define the sacrificial member as being possibly “constructed of inexpensive metal rod, bar, pole, or other types of elongated members such as tubes...” that “can dissolve into the molten metal bath...” (Spec. 1, ll. 1-13 and 5, ll. 24-27 and Br. 4-7). As correctly pointed out by the Examiner (Ans. 3), claims 1, 14, and 30 on appeal do not indicate temperatures or molten bath conditions at which the claimed sacrificial member is dissolved. Nor does the Specification limit the claimed sacrificial member to any specific materials, e.g., materials having

certain melting points. Dependent claims 5 and 9, which are said to further limit the characteristics and properties of the above claimed sacrificial member, merely recite the claimed sacrificial member as, for example, a hollow material which may be “filled with a refractory material.”

Consistent with the Appellants’ description of the claimed sacrificial member, we find that Eastwood teaches a tail 10 comprising an outer mild steel sleeve 11 corresponding to the claimed hollow material, which is filled with refractory concrete or optionally, a tail 10 provided with a central reinforcing bar made of mild steel (col. 3, ll. 50-54 and 67-68). We find that the outer mild steel sleeve or mild steel bar taught by Eastwood is capable of dissolving at some high temperature not excluded by the claims on appeal. Therefore, we concur with the Examiner that Eastwood describes the structure and/or material described in the instant Specification, which are corresponding to the means-plus-function limitations recited in claims 1, 14, and 30.³

³ We have considered the claimed functional limitations in defining the corresponding structure and/or material described in the Specification and found that the prior art structure and/or material are identical to the corresponding structure and/or material described in the Specification as indicated *supra*. Therefore, our analysis necessarily ends here notwithstanding the Appellants’ reference to *Manuel of Patent Examining Procedure* § 2182 (Aug. 2006). However, to the extent that we must consider the functional limitations of the means-plus-function limitations separate from and in addition to the corresponding structure and/or material described in the Specification as urged by the Appellants contrary to *In re Donaldson Co.*, we find that the prior art structure and/or material would necessarily perform such functions under the operating conditions encompassed by the claims on appeal since its structure and/or material are identical to those encompassed by the claims on appeal. *In re Schreiber*, 128 F.3d 1473, 1477 (Fed. Cir. 1997); *In re Best*, 562 F.2d 1252, 1255

Accordingly, based on the factual findings set forth in the Answer and above, we determine that the preponderance of evidence weighs most heavily in favor of obviousness of the subject matter defined by claims 1 through 12, 14 through 25, and 28 through 31 within the meaning of 35 U.S.C. § 103.

ORDER

In view of the forgoing, the decision of the Examiner is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a).

AFFIRMED

tf/ls

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(CCPA 1977). The Appellants have not demonstrated that the corresponding structure and/or material described in the Specification are different, much less materially different, from those of Eastwood.